

Charger Tek

"Scientists study the world as it is; engineers create the world that has never been." -- von Karman

Patoka Valley PLTW Regional Partnership - <http://patokavalleypltw.org/default.aspx>

volume 1 • issue 2

Pike Central HS PLTW

Petersburg, IN

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HMMWV project at
<http://humveeproject.blogspot.com/>*

*Editor – Scott Willis
sgwillis@blueriver.net*

Indy Power Systems meeting with Senator Lugar

By: Damon Steltenpohl and C.M. Brown

On Saturday, October 17, a group from Pike Central High School went to Indy Power Systems in Indianapolis for a meeting about the switching system that will be used in the HEV Wraith Project as well as to meet and introduce the project to Senator Lugar. Representing Pike Central were students C. M. Brown and Damon Steltenpohl, PLTW teacher Ray Niehaus, Crane team members Scott Willis and Chuck Steltenpohl, and Vocational Director of Patoka Valley Cooperative Glenn Weil. There were also 2 News crews, one from Indianapolis News Channel 6 and one from Indianapolis News Channel 13.

When we arrived at Indy Power Systems, we were given a tour of one of their research labs, and were given a description of what they did with each of the machines in it. We got to see everything from simple microscopes for finding microscopic cracks for quality control to large machines that took a whole room to simply burn a spot on metal to test the purity. It wasn't long before Senator Lugar arrived. When the senator arrived, we all went to the meeting room for a presentation by Indy Power Systems on what they have been working on.

They got to a point that they were working with us, and asked us to give the Senator a brief description on what we were tasked with and what we were doing. We explained to him the idea behind our project and what we hoped to accomplish. After the presentation was done, we went to the workroom and were given a demonstration on just what their switching system could do. They showed us how they could take Lead Acid batteries as well as Lithium-Ion Titanate batteries and transfer energy between them with very minimal loss of power. They also showed that they could generate enough energy to power a small household with a combination of both batteries. Normally you can't mix batteries of different types, which makes electric cars tricky as they only use one type and can't use others, but the new system Indy Power Systems has created can allow for any number and any combination of batteries to be used. As they put it, you could use lead acid batteries in a Toyota Prius, and get it to run as a normal car or you could put in either only high end Lithium-Ion Titanate batteries or a combination of lead acid and Lithium-Ion and have it run like a muscle car.

After their demonstration, we had a chance to talk to the designer of the Altiarnano Lithium-Ion batteries, Brad Hanauer. He was able to tell us more about the batteries than we had managed to find out on our own. He explained to us that the batteries were made of many small cells layered and connected in a series. He also explained a very important heating issue to use that is going to be very beneficial. As he explained, heat is generated at higher current flows through a battery, so the lower the voltage you run at the more heat you have, and the higher the voltage and the more batteries you have, the heat is reduced, needing a smaller cooling system.

Senator Lugar was very interested in our project and the energy savings it could create in military applications as well as commercial and domestic applications. We are thankful to have him on our side on the project.



Left to right: Damon Steltenpohl, Ray Niehaus, Senator Lugar, and C.M. Brown.

October 2009

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1	2	3
4	5 Ray Niehaus attending & presenting at National STEM meeting	6 Ray Niehaus attending & presenting at National STEM meeting	7 Ray Niehaus attending & presenting at National STEM meeting	8 Ray Niehaus attending & presenting at National STEM meeting	9	10
11	12	13 Sen. Lugar's office visit @ Pike Central	14	15	16 PLTW teacher meeting at Evansville IVY TECH	17 Meeting with Sen. Lugar @ Indy Power Systems
18	19	20	21	22	23 HMMWV moved to the closed SUNOCO station in Petersburg, IN	24
25	26	27	28	29	30	